AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

14. (currently amended): A method of detecting three-dimensional information, comprising:

illuminating an object sequentially with ~~at least two illumination lights, at least one of the first or second of the two illumination lights with an intensity that varies with time~~ a first illumination light which has a linearly varying intensity and a second illumination light which has a constant intensity;

acquiring an image of the object illuminated by said ~~at least~~ two illumination lights such that a rate of change of an image pickup gain is faster than a rate of change of intensity of the first illumination light~~by acquisition of a image pick-up gain having faster changing rate than a changing rate of the intensity of the illumination lights~~, wherein the image of the object is acquired ~~a plurality of times~~ at least two times, once during each illumination, and with a same pick-up gain during each illumination by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points of the object is detected at a speed ~~at which three-dimensional information is followed real time within a period of time corresponding to a frame of a video signal~~ at which three-dimensional image is output in real time, the three-dimensional

image being output within a period of time corresponding to one normal image frame of a video signal being received by an image pickup device .

15. (currently amended): A method of detecting three-dimensional information, comprising:

illuminating an object sequentially with ~~at least two illumination lights, at least one of the first or second of the two illumination lights with an intensity that varies with time~~ a first illumination light which has a linearly varying intensity and a second illumination light which has a constant intensity;

acquiring an image of the object illuminated by said ~~at least~~ two illumination ~~light~~ lights by acquisition of the given level of a image pick-up gain ~~with shorter changing cycle than a changing cycle of the intensity of the illumination light~~ such that a cycle of picking up images is shorter than a cycle of illumination changes, wherein the image of the object is acquired ~~a plurality of times~~ at least two times, once during each illumination, with a same pick-up gain during each illumination, by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points of the object is detected at a speed ~~at which three-dimensional information is followed real time within a period of time corresponding to a frame of a video signal~~ at which three-dimensional image is output in real time, the three-dimensional

image being output within a period of time corresponding to one normal image frame of a video signal being received by an image pickup device.

16. (withdrawn): A method of detecting three-dimensional information, comprising:

illuminating an object with an illumination light;

acquiring an image of the object illuminated by the illumination light by acquisition of at least two image pick-up gain, at least one of said image pick-up gain changing with time, and the image pick-up gain having slower changing rate than a changing rate of the illumination light, wherein the image is acquired a plurality of times by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points of the object is detected at a speed at which three-dimensional information is followed real time within a period of time corresponding to a frame of a video signal.

17. (withdrawn): A method of detecting three-dimensional information, comprising:

illuminating an object with an illumination light;

acquiring an image of the object illuminated by the illumination light by acquisition of at least two image pick-up gain, at least one of said image pick-up gain changing with time, and the image pick-up gain having slower changing cycle than a illuminating time of the illumination

light with given level of intensity, wherein the image of the object is acquired a plurality of times by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points of the object is detected at a speed at which three-dimensional information is followed real time within a period of time corresponding to a frame of a video signal.

18. (previously presented): The method of detecting three-dimensional information as defined in claim 14, wherein

a first and a second optical images of the object illuminated by the first and the second illumination light are formed;

the first and the second optical images are obtained alternately by acquiring the first and the second optical images with a single image pick-up gain over a given period of time;

the first and the second images obtained are stored; and

the distance between respective points of the objects are detected by each of the first and second images and are detected sequentially for each frame of the video signal.

19. (previously presented): The method of detecting three-dimensional information as defined in claim 15, wherein

a first and a second optical images of the object illuminated by the first and the second illumination light are formed;

the first and the second optical images are obtained alternately by acquiring the first and the second optical images with a single image pick-up gain over a given period of time;

the first and the second images obtained are stored; and

the distance between respective points of the objects are detected by each of the first and second images and are detected sequentially for each frame of the video signal.

20. (canceled).

21. (currently amended): The method of detecting three-dimensional information as defined in claim ~~14~~33, wherein the intensity of the first illumination light is increased with time, and the second illumination light is decreased with time.

22. (canceled).

23. (currently amended): The method of detecting three-dimensional information as defined in claim ~~14~~34, wherein the intensity of the first illumination light is increased with time, and the second illumination light is decreased with time.

24. (withdrawn): The method of detecting three-dimensional information as defined in claim 16, wherein

first and second optical images of the object illuminated by first and second illumination light which illuminate with single intensity over a predetermined period of time, are formed;

first and second images are obtained alternately by acquiring the first and second optical images with first and second image pick-up gains, the first and second images obtained are stored; and

the distance between respective points of the object is detected from the first and second images which are detected sequentially for each frame of the video signal.

25. (withdrawn): The method of detecting three-dimensional information as defined in claim 17, wherein

first and second optical images of the object illuminated by first and second illumination light which illuminate with single intensity over a predetermined period of time, are formed;

first and second images are obtained alternately by acquiring the first and second optical images with first and second image pick-up gains, the first and second images obtained are stored; and

the distance between respective points of the object is detected from the first and second images which are detected sequentially for each frame of the video signal.

26. (withdrawn): The method of detecting three-dimensional information as defined in claim 16, wherein the first image pick-up gain changes with time, and the second image pick-up gain is uniform.

27. (withdrawn): The method of detecting three-dimensional information as defined in claim 16, wherein the first image pick-up gain is increased with time, and the second image pick-up gain is decreased with time.

28. (withdrawn): The method of detecting three-dimensional information as defined in claim 17, wherein the first image pick-up gain changes with time, and the second image pick-up gain is uniform.

29. (withdrawn): The method of detecting three-dimensional information as defined in claim 17, wherein the first image pick-up gain is increased with time, and the second image pick-up gain is decreased with time.

30. (currently amended): A device for detecting three-dimensional information pertaining to an object comprising:

a projection section projecting illumination light having given intensity on the object;

an image pick-up section acquiring an image of the object with a given image pick-up gain;

a storage section temporary storing the image acquired by the image pick-up section; and

a signal processing section which calculates a distance between respective points of the object on the basis of intensity level information included in a video signal output from the image pick-up section,

wherein the distance between respective points of the object is detected at a speed ~~at which the three-dimensional information are followed real time within a period of time corresponding to the frame of a video signal~~ at which three-dimensional image is output in real time, the three-dimensional image being output within a period of time corresponding to one normal image frame of a video signal being received by an image pickup device.

31. (currently amended): The device for detecting three-dimensional information as defined in claim 30, wherein the projection section comprises:

a ~~law~~ laser diode or a light-emitting diode whose light is modulated in accordance with an electric signal, and

a modulator ~~capable of~~ adapted to modulate ~~modulating~~ light emitted from the laser diode or the light-emitting diode.

32. (previously presented): The device for detecting three-dimensional information as defined in claim 30, wherein the image pick-up section comprises:

imaging means for producing an optical image upon receipt of light reflected from the object;

an image pick-up element which captures the optical image and outputs a video signal; and

an image intensifier with gating operation which is disposed between the imaging means and the image pick-up element and which controls an image pick-up gain.

33. (new): A method of detecting three-dimensional information, comprising:

illuminating an object sequentially with a first illumination light and a second illumination light, both illumination lights having a linearly varying intensity;

acquiring an image of the object illuminated by at least two illumination lights by acquisition of a image pick-up gain having faster changing rate than a changing rate of the intensity of the illumination lights, wherein the image of the object is acquired a plurality of times by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points is detected at a speed at which three-dimensional image is output in real time, the three-dimensional image being output within a period of time corresponding to one normal image frame of a video signal being received by an image pickup device.

34. (new): A method of detecting three-dimensional information, comprising:

illuminating an object sequentially with at least a first illumination light and a second illumination light, both illumination lights having a linearly varying intensity;

acquiring an image of the object illuminated by said at least two illumination light by acquisition of the given level of a pick-up gain with shorter changing cycle than a changing cycle of the intensity of the illumination light, wherein the image of the object is acquired a plurality of times by an image pick-up element having storage effect; and

detecting a distance between individual points of the object on the basis of the image obtained; wherein

the distance between respective points of the object is detected at a speed at which three-dimensional image is output in real time, the three-dimensional image being output within a period of time corresponding to one normal image frame of a video signal being received by an image pickup device.